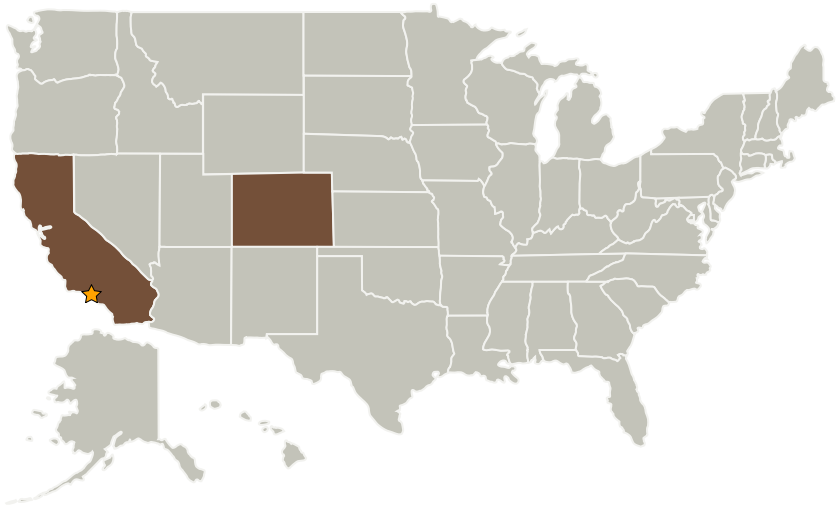
Lightweight Gearbox Technology, Phase I

Completed Technology Project (2005 - 2005)

Project Introduction

To date, the majority of the gearboxes used on the rovers have been based on very conventional materials, process and designs. This has primarily been a result of the fast paced schedules associated with rover development. With little time for recovery, these programs are extremely risk adverse and the idea of developing new technology on the program is absolutely impractical. As there is no rover planned for the 2007 there is a longer than normal dwell between rover programs. The hope is to capitalize on this time to advance the technology used on the common gearboxes employed on the rover. This will allow new technology to be introduced into the gearbox designs. The plan for reducing the gearbox mass relies on a three pronged approach. First, design innovations above and beyond AGMA standards will be evaluated for incorporation into the basic planetary gearbox design. Second, advanced materials and processes will be evaluated for use in gears and planet bearings. And lastly, the cost implications of the advanced technology will be compiled to insure the correct balance is maintained between weight reduction and cost expense.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
SpaceDev, Inc.	Supporting Organization	Industry	Louisville, Colorado

Primary U.S. Work Locations	
California	Colorado

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jim Sprunck

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.2 Mission Infrastructure, Sustainability, and Supportability
    - TX07.2.1 Logistics Management